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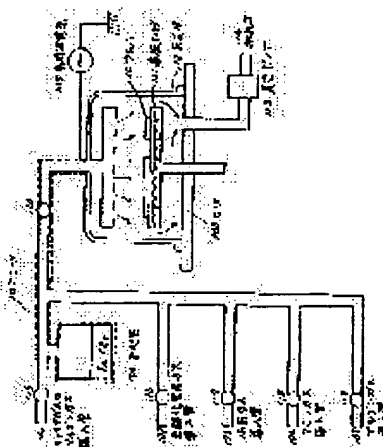
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## (54) FORMATION METHOD FOR CAPACITY INSUTATING FILM

(57)Abstract:

**PURPOSE:** To obtain a capacity insulating film which can be applied to an ultra- LSI memory as a 64 MDRAM or higher by a method wherein an Si<sub>3</sub>N<sub>4</sub> film is formed by a thermochemical reaction which uses a silane-based raw-material gas and NH<sub>3</sub> gas and, in succession, a tantalum oxide film is formed by a plasma chemical reaction which uses a halogen-based tantalum raw-material gas and N<sub>2</sub>O gas.

**CONSTITUTION:** The formation method of a capacity insulating film is composed of the formation process of a silicon nitride film and the formation process of a tantalum oxide film. The formation process of the silicon nitride film is a process to form the silicon nitride film by a thermochemical reaction which uses a silane-based raw-material gas and ammonia gas. The formation process of the tantalum oxide film is a process to form the tantalum oxide film by a plasma chemical reaction which uses a halogen-based tantalum raw-material gas and nitrous oxide gas. For example, a silicon nitride film in 20 to 30Å is formed on the surface of a wafer by a thermochemical reaction which uses monosilane gas and ammonia gas. Then, a tantalum oxide film is formed on the surface of the wafer by a plasma chemical reaction which uses tantalum chloride gas and nitrous oxide gas.



## LEGAL STATUS

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